

## **CalNex Forecast Notes - Saturday, May 1, 2010**

**California Synoptic Overview** - Jeff Lancero (jlancero@arb.ca.gov)

### **Saturday May 1**

- High pressure Ridge over the eastern pacific forecast to build over CA
- Northerly transport flow over the west

### **Sunday May 2**

- Ridge peaks as it moves inland
- Flow shifts more NNW
- Valley gradients tightens in N.CA, weaker in S.CA

### **Monday May 3**

- Weak trough approaches the NW, Breaking down the Ridge
- Transport flow in N. Cal is W-NW, slightly weaker flow Westerly in SoCal
- Models in more agreement with breaking down the ridge.

### **Tuesday May 4**

- Trof over WA/OR
- Flow is Westerly-NW in the north, SW in south CA
- Valley and desert gradients relax
- Marine layer returns by Tuesday

## **Comments on Local Features and Potential Targets**

**Monday** - Potential P3 Flight day

Opportunity to sample aged LA emissions and descended intercontinental pollution off shore from LA to north of Point Conception. These features will be moving onshore on Tuesday.

Also good opportunity for sampling near field LA Basin emissions against relatively clean background.

Potential targets in southern/central SJV (Kern, Tulare/ Kings, Fresno) for poor dispersion and deteriorating air quality. Moderate air quality is expected for central SJV (Tulare, Kings, and Fresno Counties) on Monday. AQ is anticipated to be in the Unhealthy for Sensitive Groups (USG) range in southern SJV (Kern County)

**Tuesday** - Potential P3 Flight day

AQ is anticipated to remain in the Unhealthy for Sensitive Groups (USG) range in southern SJV (Kern County) on Tuesday. Also potential for air quality to be in USG range in central SJV for Tuesday.

## Large Scale Transport Notes - Brad Pierce

LA and SF AIRNOW Ensemble overview: Good to low-moderate O<sub>3</sub> AQ predicted along LA and SF transport routes during FX period (Sat-Monday Afternoon)

- Large-scale transport of LA Ensemble shifting from broad North Eastward to narrow South Eastward during FX period (Sat-Monday)
  - LA AIRNOW ensemble trajectories initialized 00Z 05/01 (Fri Afternoon) over El Paso on 00Z 05/04 (Mon Afternoon)
  - Main transport route along Baja and Southern AZ/NM.
  - Good prediction of peak O<sub>3</sub> in LA and San Diego on preceding 3 days.
  - Good prediction of background O<sub>3</sub> at El Paso TX.
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- Large-scale transport of SF Ensemble shifting from broad to narrow South Eastward during FX period (Sat-Monday)
  - SF AIRNOW ensemble trajectories initialized 00Z 05/01 (Fri Afternoon) over SW NM on 00Z 05/04 (Monday Afternoon).
  - Main transport route along central CA coast and offshore of Southern CA.
  - Good prediction of peak O<sub>3</sub> in SF and near field (VAFB, CA) during previous 3 days.
  - Good prediction of background O<sub>3</sub> in Southern NM

500m Reverse-Domain Filling (RDF) overview: Lagrangian mean descent of long-range transported pollution impacting central and southern CA. Moderate (5-10ppbv/day) LA background O<sub>3</sub> P-L impacting offshore of southern CA during FX period (Sat-Tuesday Afternoon)

- 00Z May 02, 2010 (Saturday Afternoon)
- Moderate (~60ppbv) O<sub>3</sub> and PM<sub>2.5</sub> at 500m over Central CA associated with Lagrangian mean descent of long-range transported air
- Moderate (5-10ppbv/day) background O<sub>3</sub> P-L in LA
- 00Z May 03, 2010 (Sunday Afternoon)
- Elevated (>700ppbv) O<sub>3</sub> and PM<sub>2.5</sub> at 500m over Central CA associated with Lagrangian mean descent of long-range transported air
- Moderate (5-10ppbv/day) background O<sub>3</sub> P-L moving offshore from LA
- 00Z May 04, 2010 (Monday Afternoon)
- Long-range transported air off-shore of Point Conception at 500m
- Moderate (5-10ppbv/day) background O<sub>3</sub> P-L offshore from LA
- 00Z May 05, 2010 (Tuesday Afternoon)
- Long-range transported air moves back over Southern CA at 500m
- Moderate (5-10ppbv/day) background O<sub>3</sub> P-L moving back onshore over Southern CA at 500m



## **Forecast Details**

**San Francisco Bay Area** - NO FORECAST TODAY (for met features look at NorCal COAMPS slides in Southern Coast Waters section)

Note:

smaller red font in parenthesis e.g., (10kt) indicates prediction from previous forecast which differs from the forecast today

**Sacramento Valley** - NO FORECAST TODAY (for met features look at NorCal COAMPS slides in Southern Coast Waters section)

Note:

smaller red font in parenthesis e.g., (subsiding N wind limit downslope flow to eastern SV) indicates prediction from previous forecast which differs from the forecast today

**San Joaquin Valley** - Jennifer Ridgway [jennifer.ridgway@valleyair.org]

## **SATURDAY MAY 1**

**Morning Soundings:** The soundings for Fresno and Bakersfield were not available.

**Wind Profilers:** Light to moderate north to northeasterly flow across the San Joaquin Valley (SV) this morning.

Profiler at Lost Hills in Kern County indicates a virtual temperature inversion of 15 degrees F from surface up to 984 feet AGL.

**Surface Winds (CANSAC 00Z):** Moderate to strong NW to N flow across the Delta and northwesterly

flow over Altamont Pass predicted throughout the day. Typical daytime upslope flow and nighttime/early morning downslope flow near the mountain regions. Northern SJV and west side of Fresno County: Light to moderate NW flow predicted throughout the day. Southern and central SJV: Light S and SW wind flow with some areas light and variable flow across the predicted this morning becoming light to moderate NW by 17:00.

## **SUNDAY MAY 2**

**Surface Winds (CANSAC 00Z):** Strong to moderate N flow predicted across the Delta and strong NW to N flow over Altamont Pass predicted throughout the day. Typical daytime upslope flow and nighttime/early morning downslope flow near the mountain regions in Tulare and Kern Counties. Moderate N flow predicted near the valley floor/mountain interface on the west side from Kings County northward throughout the day. Light S and SW flow across Kern, Tulare, central and eastern Fresno Counties predicted in the morning becoming light and variable to W flow by 17:00.

## **MONDAY MAY 3**

**Surface Winds (CANSAC 00Z):** Light to moderate W flow through the Delta predicted throughout the day. Light W flow over Altamont Pass predicted in the early morning becoming light SE and then E by 17:00. Typical daytime upslope flow and nighttime/early morning downslope flow near the mountain regions. Light SE and NE flow predicted in Kern County and light SE and variable flow across the rest of the SJV in the morning. Flow predicted to become light NW to light variable by 17:00.

## **TUESDAY MAY 4**

**Surface Winds (NAM/ETA 12Z):** Surface charts show relaxed pressure gradients in the morning tightening by evening. NW winds around 10 mph forecast across SJV.

[http://www.rap.ucar.edu/weather/model/displayMod.php?var=eta\\_sfc\\_mslp&hours=hr72hr84](http://www.rap.ucar.edu/weather/model/displayMod.php?var=eta_sfc_mslp&hours=hr72hr84)

## **WEDNESDAY MAY 5**

**Surface Winds (GFS 00Z):** Surface charts show tightening pressure gradients with W winds around 10 mph forecast across SJV. [http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs\\_sfc\\_mslp&hours=hr096hr108](http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr096hr108)

## **Boundary Layer Mixing Heights**

### **SATURDAY MAY 1**

No mixing predicted in the early morning improving to 6,500 feet by 17:00. Best heights over the central parts of the SJV.

### **SUNDAY MAY 2**

No mixing predicted in the early morning improving to 5,000 feet by 17:00. Best heights over the central and eastern areas of the SJV.

### **MONDAY MAY 3**

No mixing predicted in the early morning improving to 6,500 feet. Best heights over areas in north central Fresno County, western Kings County, northwestern Kern County.

### **TUESDAY MAY 4**

### **WEDNESDAY MAY 5**

## **Air Quality:**

### **SATURDAY MAY 1**

Ridge beginning to build into the region. Surface winds still strong enough to provide good dispersion in the northern SJV. Surface winds starting to decrease so dispersion beginning to deteriorate in the central and southern SJV. Expect good AQ in the northern SJV and starting to move into moderate range in the central and southern SJV today.

### **SUNDAY MAY 2**

Ridge over region so light winds will lend to deteriorating dispersion especially in the central and southern SJV. Expect Good AQ in the northern part of the District and Moderate AQ in the southern parts the District.

### **MONDAY MAY 3**

Ridge still over region. Light winds lending to deteriorating dispersion. Moderate air quality expected across the SJV.

### **TUESDAY MAY 4**

Trough moving into Pacific NW expected to influence northern SJV with increasing surface wind speeds which will improve dispersion. AQ may improve to Good range in the north. Central and south still under light winds/poor dispersion due to the ridge so expect AQ to range from Moderate in the central SJV to Unhealthy for Sensitive Groups in the southern SJV.

### **WEDNESDAY MAY 5**

Dispersion expected to improve with increasing surface winds due to the trough dropping further south but will have to wait and see if GFS forecast pans out. Good to moderate AQ anticipated across the SJV if the trough moves far enough south.

**Central Coast** - NO FORECAST TODAY (for met features look at NorCal COAMPS slides in Southern Coast Waters section)

**SoCal Coastal Waters** - Lee Eddington (Lee.Eddington@navy.mil)

See detailed slides and speaker notes in power point file

+ Saturday afternoon (00Z 02 May)

- Marine Low Clouds

- \* SCT St Crescent City to San Francisco
- \* CLR San Francisco to San Diego

- SOCAL Marine Layer Winds

- \* WNW 5-15 kts inner waters
- \* WNW 15-25 kts outer waters

+ Sunday morning (12Z 02 May)

- Marine Low Clouds

- \* CLR/SCT St Crescent City to Monterey
- \* SCT St Monterey to Point Arguello
- \* CLR/SCT St Point Arguello to Point Mugu
- \* BKN/OVC St/StCu Point Mugu to San Diego

- SOCAL Marine Layer Winds

- \* large eddy centered south of San Clemente Island
- \* ENE-ESE 5-10 kts inner waters
- \* NNW 10-20 kts outer waters

+ Sunday afternoon (00Z 03 May)

- Marine Low Clouds

- \* CLR Crescent City to Point Conception
- \* OVC/BKN St Point Conception to Palos Verdes
- \* SCT/CLR StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- \* WNW 5-15 kts inner waters
- \* WNW 10-15 kts outer waters

+ Monday morning (12Z 03 May)

- Marine Low Clouds

- \* SCT St Crescent City to Point Arena
- \* CLR Point Arena to Point Conception
- \* SCT/BKN St Point Conception to San Diego

- SOCAL Marine Layer Winds

- \* ENE-ESE 5-10 kts inner and outer waters

+ Monday afternoon (00Z 04 May)

- Marine Low Clouds

- \* SCT/BKN St Crescent City to San Francisco
- \* CLR San Francisco to San Luis Obispo
- \* BKN/OVC St San Luis Obispo to Palos Verdes
- \* CLR/SCT St/StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- \* WNW 5-10 kts inner and outer waters

+ Tuesday morning (12Z 04 May)

- Marine Low Clouds

- \* CLR Crescent City to San Francisco
- \* BKN/OVC St San Francisco to Point Arguello
- \* CLR/SCT St Point Arguello to Point Mugu
- \* BKN/OVC St Point Mugu to San Diego

- SOCAL Marine Layer Winds

- \* weak eddy south of Anacapa Island
- \* ESE 0-5 kts inner waters
- \* WNW 5-15 kts outer waters

+ Tuesday afternoon (00Z 05 May)

- Marine Low Clouds

- \* CLR Crescent City to Point Arguello
- \* SCT/BKN StCu Point Arguello to San Diego

**South Coast** - NO FORECAST TODAY (for met features look at SoCal COAMPS slides in Southern Coast Waters section)

